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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/987,327

11/14/2001

Atsushi Miyazaki

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6892

466

7590

04/28/2003

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EXAMINER

LEROY, DAVID H

ART UNIT

PAPER NUMBER

1742

DATE MAILED: 04/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Applicati n No.

09/987,327

Applicant(s)

MIYAZAKI ET AL

Examiner

David H. LeRoy

Art Unit

1742

-- The MAILING DATE of this communication appears on the c ver she t with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Hashizume et al. U.S. Pat. No. 5,496,421**

1. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,496, 421 to Hashizume et al.

Hashizume et al. teaches (See Claim 39) a Cr-containing steel consisting essentially of 0.06 wt.% or less C; 12-16 wt.% Cr; 1 wt.% or less Si; 2 wt.% or less Mn; 0.5-8 wt.% Ni ; 0.1-2.5 wt.% Mo ; 0.3-4 wt.% Cu; 0.05 wt.% or less N; at least one element selected from the group consisting of 0.01-0.1 wt.% V, 0.01-0.1 wt.% Nb; and optionally at least one additional element selected from the group consisting of 0.01-0.10 wt.% Al, 4 wt.% or less W, 0.2 wt.% or less Ti, 0.2 wt.% or less Zr, 0.2 wt.% or less Ta, 0.2 wt.% or less Hf, 0.01 wt.% or less Ca and 0.02 wt.% or less or rare earth metal; and the balance Fe and impurities including no more than 0.04 wt.% P and no more than 0.01 wt.% S.

2. Hashizume et al.'s composition ranges (See Claim 39) overlap the ranges by mass, of from about 0.001% to about 0.020% C, more than about 0.10% and less than about 0.50% Si, less than about 2.00% Mn, less than about 0.060% P, less than about 0.008% S, from about 12.0% or more to about 16.0% Cr, from about 0.05% to about 1.00% Ni, less than about 0.020% N, from about 10 times (C+N) to about 1.00% (i.e. calculated as about 0.01-1.00%) Nb, more than about 0.80% and less than about 3.00% Mo and Fe and incidental impurities of the claimed invention. Therefore, since the claimed ranges "overlap or lie inside ranges disclosed by the prior art", a prima facie case of obviousness exists. See *In re Wertheim*, 541 F. 2d 257, 191 USPQ 90 (CCPA1976); *In re Woodruff*, 919 F. 2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990), See MPEP 2144.05.

3. With respect to the formula concerning the relationship of wt.% Si and wt.% Mo in lines 14-17 of Claim 1, Hashizume et al. does not disclose the formula. However, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art. *In re Cooper and Foley* 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, *Taklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77, and *In re Pilling*, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75.

Furthermore, for example, using 0.1 wt.% Mo of Hashizume et al. the relationship is established  $[1.2 \text{ minus } 0.4 (0.1)] = [1.2 \text{ minus } (0.04)] = 1.16$ , which is greater than Hashizume et al. Si content of 1 % or less, as in the claimed invention. Therefore, the claimed relationship of Si and Mo would have been expected in Hashizume et al., since the content of Si and Mo of Hashizume et al. overlap the claimed contents of Si and Mo, respectively.

4. With respect to “soft” used in the preamble of the claimed invention, because Hashizume et al.’s alloy is substantially the same as the claimed alloy, therefore, the claimed properties would have highly been expected to one of ordinary skill in the art. See In re Best 195 USPQ 430, 433 (CCPA 1977) and MPEP 2112.01.

5. With respect to Mo content of Claim 2, the Mo content of Hashizume et al.’s composition range of 0.1-2.5 wt.% Mo (See Claim 39) overlaps the range by mass of more than about 1.50% and less than about 3.0% Mo of the claimed invention. Therefore, since the claimed ranges “overlap or lie inside ranges disclosed by the prior art”, a prima facie case of obviousness exists. See MPEP 2144.05.

6. With respect to Claim 3’s addition of at least one selected from the group of Cu, Ti, V, or B, Hashizume et al.’s composition ranges of 0.3-4 wt.% Cu, 0.2 wt.% or less Ti, and 0.01-0.1 wt.% V (See Claim 39) overlap the ranges by mass of at least one selected from the group of from about 0.05% to about 1.00% Cu, from about 0.02% to about 0.50% Ti, and from about 0.05% to about 0.50% V of the claimed invention. Therefore, since the claimed ranges “overlap or lie inside ranges disclosed by the prior art”, a prima facie case of obviousness exists. See MPEP 2144.05. It is noted that B is absent or could have been considered an impurity in Hashizume et al. The claimed invention does not require B to be present.

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7. With respect Claim 4's addition of at least one selected from the group consisting of Cu, Ti, V, or B, Hashizume et al.'s composition ranges of 0.3-4 wt.% Cu, 0.2 wt.% or less Ti, and 0.01-0.1 wt.% V (See Claim 39) overlap the ranges by mass of at least one selected from the group consisting of from about 0.05% to about 1.00% Cu, from about 0.02% to about 0.50% Ti, and from about 0.05% to about 0.50% V of the claimed invention. Therefore, since the claimed ranges "overlap or lie inside ranges disclosed by the prior art", a prima facie case of obviousness exists. See MPEP 2144.05. It is noted that B is absent in Hashizume et al. or could have been considered an impurity. The claimed invention does not require B to be present. See paragraph 5 above for the obviousness analysis concerning Mo of Claim 2.

8. With respect to W in Claim 5, Hashizume et al.'s composition range of 4 wt.% or less W (See Claim 39) overlaps the range by mass of from about 0.50% to about 5.00% W of the claimed invention. Therefore, since the claimed ranges "overlap or lie inside ranges disclosed by the prior art", a prima facie case of obviousness exists. See MPEP 2144.05.

9. With respect to Mo in Claim 6, see paragraph 5 above for the obviousness analysis.

With respect to W in Claim 6, see paragraph 8 above for the obviousness analysis.

Therefore, since the claimed ranges "overlap or lie inside ranges disclosed by the prior art", a prima facie case of obviousness exists. See MPEP 2144.05.

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10. With respect to Claim 7's addition of at least one selected from the group of Cu, Ti, V, or B, see paragraph 6 above for the obviousness analysis.

With respect to W in Claim 7, see paragraph 8 above for the obviousness analysis.

11. With respect to Al in Claim 8, Hashizume et al.'s composition range of 0.01-0.10 wt.% Al (See Claim 39) overlaps the range by mass of from about 0.02% to about 0.50% Al of the claimed invention.

Therefore, since the claimed ranges "overlap or lie inside ranges disclosed by the prior art"; a prima facie case of obviousness exists. See MPEP 2144.05.

12. With respect to Mo in Claim 9, see paragraph 5 above for the obviousness analysis.

With respect to Al in Claim 9, see paragraph 11 above for the obviousness analysis.

13. With respect to Claim 10's addition of at least one selected from the group of Cu, Ti, V, or B, see paragraph 6 above for the obviousness analysis.

With respect to Al in Claim 10, see paragraph 11 above for the obviousness analysis.

14. With respect to Claim 11's addition of at least one selected from the group consisting of Cu, Ti, V, or B, see paragraph 7 above for the obviousness analysis.

With respect to Al in Claim 11, see paragraph 11 above for the obviousness analysis.



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15. With respect to Claim 12's addition of at least one element selected from the group consisting of REM and Zr, Hashizume et al.'s composition range of 0.2 wt.% or less Zr (See Claim 39) overlaps the ranges by mass of from about 0.05% to about 0.50% Zr of the claimed invention. Therefore, since the claimed ranges of Zr "overlap or lie inside ranges disclosed by the prior art", a prima facie case of obviousness exists. See MPEP 2144.05.

With respect to the REM (i.e., rare earth metal) content, Hashizume et al.'s REM content ranges of 0.02 wt.% rare earth metal (See Claim 39) is close to the REM content by mass of the claimed invention of about 0.03% REM. Therefore, since the claimed ranges "are close enough that one skilled in the art would have expected them to have the same properties", a prima facie case of obviousness exists (Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 Fed. Cir. 1985, (See MPEP 2144.05).

16. With respect to Mo in Claim 13, see paragraph 5 above for the obviousness analysis.

With respect to addition of at least one element selected from the group consisting of REM and Zr in Claim 13, see paragraph 15 above for the obviousness analysis.

17. With respect to Claim 14's addition of at least one selected from the group of Cu, Ti, V, or B, see paragraph 6 above for the obviousness analysis.

With respect to addition of at least one element selected from the group consisting of REM and Zr in Claim 14, see paragraph 15 above for the obviousness analysis.

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18. With respect to Claim 15's addition at least one selected from the group of Cu, Ti, V, or B, see paragraph 7 above for the obviousness analysis.

With respect to addition of at least one element selected from the group consisting of REM and Zr in Claim 15, see paragraph 15 above for the obviousness analysis.

19. With respect to W in Claim 16, see paragraph 8 above for the obviousness analysis.

With respect to addition of at least one element selected from the group consisting of REM and Zr in Claim 16, see paragraph 15 above for the obviousness analysis.

20. With respect to the physical properties set forth in Claim 17 concerning the ratio of (112) diffraction intensity of the Laves phase to (111) diffraction intensity of Nb carbonitride, because Hashizume et al.'s alloy is substantially the same as the claimed alloy, therefore, the claimed properties would have highly been expected to one of ordinary skill in the art. See In re Best 195 USPQ 430, 433 (CCPA 1977) and MPEP 2112.01.

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**Hashizume et al. U.S. Pat. No. 5,496,421 in view of Fujita et al. U.S. Patent No. 6,123,897**

The following rejection is applied to the soft Cr-containing steel that further comprises Boron (B) as claimed:

21. Claims 3, 4, 7, 10, 11, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,496, 421 to Hashizume et al. in view of Fujita et al. U.S. Patent No. 6,123,897.

Hashizume et al. is discussed in paragraph 1 above. Hashizume does not teach inclusion of, in mass %, about 0.0005 to about 0.0100 % Boron in Hashizume et al.'s alloy.

Fujita et al. teach Cr-Ni-Co steel containing 0.002-0.010 wt.% B (See Claim 7). Fujita et al. teach (See Col. 6 lines 5-10) that B improves creep ruptures strength. Fujita et al.'s range of B overlaps the range of B in the claimed invention.

Therefore, it would have been obvious to one of ordinary skill in the art to have added 0.002-0.010 % B into Hashizumi et al's alloy as taught by Fujita et al. with the expectation of improving creep rupture strength of the alloy as disclosed by Fujita et al. (See Col. 6 lines 5-10).

22. With respect to Claim 3, the rejection ground for at least one selected from about 0.05 to about 1.00% Cu, from about 0.02% to about 0.50% Ti, and from about 0.05% to about 0.50% V is given in paragraph 6 above.

23. With respect to Claim 4, the rejection ground for at least one selected from the group consisting of from about 0.05% to about 1.00% Cu, from about 0.02% to about 0.5% Ti, and from about 0.05% to about 0.50% V is given in paragraph 7 above.

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24. With respect to Claim 7, the rejection ground for about 0.50% to about 5.00% of W is given in paragraph 8 above.

25. With respect to Claims 10 and 11, the rejection ground for of from about 0.02% to about 0.50% Al is given in paragraph 11 above.

26. With respect to Claims 14 and 15, the rejection ground for of from about 0.05% to about 0.50% Zr and of from about 0.03% REM, see paragraph 15 above.

### ***Inquiries***

Any inquiry concerning this communication should be directed to David H. LeRoy at telephone number 703-305-5793. The examiner can normally be reached 7a.m.-5:30 p.m. Monday-Thursday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached at 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-873-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

DHL

4/23/03

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